

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

LEIGHTON TECHNOLOGIES LLC,

Plaintiff and Counterclaim Defendant,

v.

OBERTHUR CARD SYSTEMS, S.A.,

Defendant and Counterclaim Plaintiff.

04 Civ. 02496 (CM)(LMS)

Hon. Colleen McMahon

**PLAINTIFF'S BRIEF IN SUPPORT
OF ITS CLAIM CONSTRUCTION**

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SUMMARY OF CONSTRUCTED TERMS

<i>“Electronic Element”</i> :	a device having distinct electrical characteristics and having terminals at which it may be connected to other elements to form a circuit that utilizes a semiconductor device
<i>“Plastic Core Sheets”</i> :	plastic sheets between which the electronic element is positioned
<i>“Non-Electronic Carrier”</i> :	a device that holds the electronic element to protect it from physical damage during lamination, where the device is not part of a circuit that utilizes a semiconductor device
<i>“Directly”</i> :	in immediate physical contact
<i>“Laminator apparatus”</i> :	equipment that is used to unite two or more layers of material, such as the core, by the application of heat and pressure
<i>“Coating”</i> :	covering
<i>“Milling”</i> :	using a machine to remove

I. PRELIMINARY STATEMENT

Plaintiff Leighton Technologies LLC ("Plaintiff") owns U.S. Patent Nos. 5,817,207, 6,036,099, 6,214,155 and 6,514,367 ("Patents-In-Suit"), which generally are directed to plastic cards that include an electronic element, such as a chip.¹ More specifically, they describe processes for making radio frequency identification ("RFID") cards -- also known as "contactless smart cards" -- in which a computer chip and/or an antenna is encapsulated between plastic sheets. The Patents-In-Suit claim the use of highly coordinated heating, cooling, and pressure cycles to encapsulate the electronic element within the plastic sheets. The Patents-In-Suit improved over prior technology by reducing the complexity of manufacturing plastic cards.

Defendant Oberthur Card Systems, S.A. ("Defendant") is a global player in the smart card industry. Defendant, based in France, and certain of its U.S. subsidiaries, have known about the Patents-In-Suit since at least June 2003. Despite this actual knowledge, Defendant and its U.S. subsidiaries have manufactured smart cards using the patented processes.

A Markman hearing to construe claims of the Patents-In-Suit is scheduled for December 6-8, 2004. Plaintiff submits this brief pursuant to the Court's Scheduling Order dated July 22, 2004, which requires briefs setting forth proposed claim constructions based only on intrinsic evidence.

¹ True and correct copies of the Patents-In-Suit are provided as Exhibits A-D in the accompanying *Declaration of Neil G. Cohen* ("Cohen Decl."). Plaintiff cites to a page of an exhibit by indicating the letter of the exhibit and then the page number therein -- *e.g.*, the first page of Exhibit A would be numbered as "A1."

II. PLAINTIFF'S PROPOSED CLAIM CONSTRUCTION

Plaintiff's proposed construction is summarized next to Claim 1 of U.S. Patent No.

5,817,207, which is representative of the independent claims of the Patents-In-Suit.

Claim 1 of the '207 Patent	Plaintiff's Proposed Construction
A process for incorporating at least one electronic element in the manufacture of a plastic card, comprising the steps of:	An " electronic element " is a device having distinct electrical characteristics and having terminals at which it may be connected to other elements to form a circuit that utilizes a semiconductor device.
(a) providing first and second plastic core sheets ;	The term " plastic core sheets " means plastic sheets between which the electronic element is positioned.
(b) positioning said at least one electronic element in the absence of a non-electronic carrier directly between said first and second plastic core sheets to form a core, said plastic core sheets defining a pair of inner and outer surfaces of said core;	A " non-electronic carrier " is a device that holds the electronic element to protect it from physical damage during lamination, where the device is not part of a circuit that utilizes a semiconductor device. The word " directly " means "in immediate physical contact."
(c) positioning said core in a laminator apparatus , and subjecting said core to a heat and pressure cycle, said heat and pressure cycle comprising the steps of: (i) heating said core for a first period of time; (ii) applying a first pressure to said core for a second period of time such that said at least one electronic element is encapsulated by said core; (iii) cooling said core while applying a second pressure to said core,	A " laminator apparatus " is equipment that is used to unite two or more layers of material, such as the core, by the application of heat and pressure.
(d) coating at least one of said outer surfaces of said core with a layer of ink; and	The word " coating " means "covering."
(e) applying a layer of overlamine film to at least one of said outer surfaces of said core.	

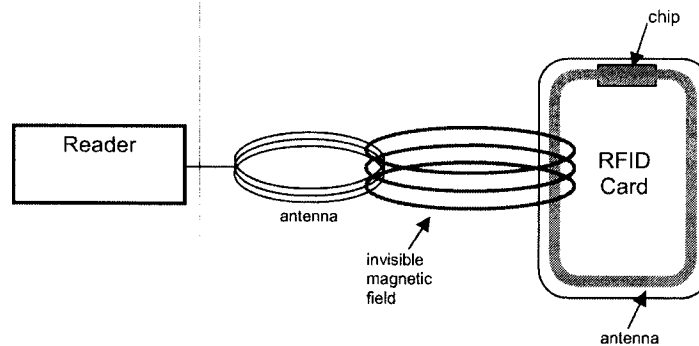
In addition, U.S. Patent Nos. 6,036,099 and 6,514,367 include a claim step identical or substantially similar to "(e) **milling** a region of said core to a controlled depth so as to form a cavity which exposes at least one contact pad of said electronic element." Plaintiff proposes that "**milling**" means "using a machine to remove."

For the following reasons, Plaintiff respectfully requests the Court to construe the terms of the claims of the Patents-In-Suit as set forth above.

III. BRIEF BACKGROUND OF THE TECHNOLOGY

The Patents-In-Suit relate to radio frequency identification (“RFID”) technology, which utilizes two major components -- a card and a reader. The card and reader work together, for example, to transmit data stored on the card to the reader. The reader transmits the data to computers that make use of it.

The figure below depicts an exemplary interaction between the card and the reader:



The card typically is the size of a credit card and includes a chip and an antenna. The chip is a delicate piece of silicon that is etched with an electronic circuit. The chip requires a small amount of electrical power to operate. When the card is placed near the reader’s antenna, the card’s antenna gathers energy from an invisible magnetic field, produced by the reader, and converts the energy into a form of electrical energy that powers the chip.² Once the chip is powered, it can transmit data to the reader via the card’s antenna.

Perhaps the most widespread use of RFID cards in the United States is to open a locked door. For example, a computer may be programmed to unlock a door upon the receipt of a valid identification code. A user having an RFID card approaches the reader, which is positioned near the door, and places the card in close proximity to (but not necessarily in contact with) the

² In contrast to an RFID or contactless card, a “contact card” requires physical contact between a reader and contacts at the surface of the card in order for data to be transferred.

reader. The reader and card interact as described above to cause the card to transmit the stored identification code to the reader, which then transfers the code to the computer. The computer can then validate the code and unlock the door.

There are many other uses for RFID technology, including credit/debit cards, mass transit access, toll collection (*e.g.*, EZ-PASS), and government identification.

IV. THE PATENTS-IN-SUIT

To facilitate the Court's understanding of the relationship between the Patents-In-Suit, Plaintiff provides a Family Tree in Appendix 1 hereto.

A. The '207 and '155 Patents

United States Patent No. 5,817,207 is directed to processes for manufacturing plastic cards that include an electronic element. Cohen Decl., Exhibit A, the "'207 Patent." U.S. Patent No. 6,214,155 is a continuation³ of the '207 Patent.⁴ Cohen Decl., Exhibit C, the "'155 Patent."

Referring to Figure 4 (reproduced below), the '207 Patent teaches that an electronic element 20 is positioned between plastic sheets 30 and 32 to form a core 33. A6, Col. 3:66-4:2. The specification acknowledges that these "electronic elements . . . and their insertion into plastic cards is not new, however, the present invention provides a new hot lamination process for manufacturing plastic cards . . . with these electronic elements. . . ." A6, Col. 3:53-62.

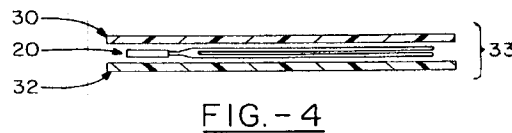


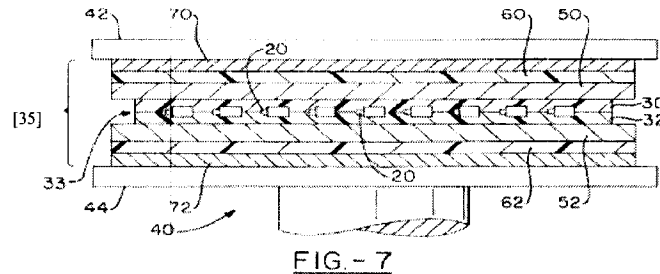
FIG. - 4

³ A "continuation application" is one based on the same disclosure as an earlier application, which includes claims of different scope. *Transco Prods., Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 555 (Fed. Cir. 1994), *cert. denied*, 513 U.S. 1151 (1995).

⁴ For ease of reference throughout this brief, Plaintiff cites only to the specification of the '207 Patent, although the same statements are found in the '155 Patent.

The specification teaches that the electronic element 20 “may take a wide variety of forms and perform a wide variety of functions.” A6, Col. 3:46-47. Specific disclosed examples of the electronic element include chips connected to various types of antennas and “any other suitable electronic element.” A6, Col. 3:48-52.

As shown in Figure 7 (reproduced below), the core 33 (containing nine electronic elements 20) is placed in a laminator 40, which includes upper and lower platens 42 and 44. The platens 42 and 44 heat, cool, and apply pressures to the core 33 via intermediate layers.⁵ A6, Col. 4:22-32. The core 33 and intermediate layers form a book 35. A6, Col. 4:33-40.



A first lamination cycle is initiated by closing laminator platens 42 and 44 and preferably applying little or no pressure to the book 35. A6, Col. 4:41-44. A heat cycle is initiated to bring the temperature of the platens 42 and 44 to a predetermined temperature for a predetermined period of time (e.g., 275-400 °F for more than 5 minutes). A6, Col. 4:44-48. The pressure of laminator 40 is then increased to facilitate the flow of the plastic core sheets 30 and 32 to encapsulate the electronic element 20 within the sheets. A6, Col. 4:48-54.

The laminator 40 then applies a chill cycle to the book 35 in which the pressure of the laminator 40 is increased (e.g., preferably by approximately 25%) until the platens 42 and 44

⁵ The intermediate layers include first and second laminating plates 50 and 52; laminating pads 60 and 62; and steel plates 70 and 72. A6, Col. 4:33-40.

have cooled to a predetermined temperature for a predetermined period of time (e.g., approximately 40-65 °F for approximately 10-15 minutes). A6-7, Col. 4:66-5:5.

The core 33 is removed from the laminator 40 and may be coated on at least one of its outer surfaces 34 and 35 with a layer of ink 36. A7, Col. 5:6-12. A clear layer of overlamine film 38 and 39 may be applied to the ink-coated core 33. A7, Col. 5:25-31. Individual cards then may be cut from the laminated core 33. A7, Col. 5:67-6:4.

1. The Prosecution History of the ‘207 Patent⁶

The ‘207 Patent issued from application number 08/727,789 (the “‘207 Application”).⁷ ‘207 Prosecution History at G14-61. The ‘207 Application initially contained 22 claims, including independent Claim 1.⁸ G44-50.

Application Claim 1 originally recited

1. A hot lamination process for the manufacture of a plastic card, said process comprising the steps of:

- (a) providing first and second plastic core sheets;
- (b) **positioning at least one electronic element between said first and second plastic core sheets** to form a layered core;
- (c) positioning said core in a laminator apparatus . . . ;
- (d) **printing on** at least one of said upper and lower surfaces of said core such that a layer of ink is applied to said at least one upper and lower surface of said core

G44 (emphasis and paragraphing added).

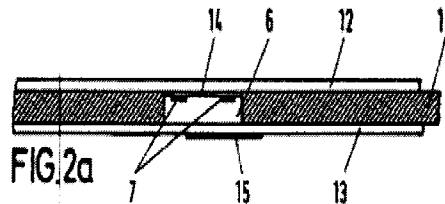
⁶ Cohen Decl., Exhibit G, the “‘207 Prosecution History.”

⁷ The ‘207 Application claimed the benefit of a provisional application number 60/005,685. A1, “Related U.S. Application Data”

⁸ Application Claim 21 was also independent, but was withdrawn with application Claims 20 and 22 in response to a restriction requirement. G68. The Patent Office issues a “restriction requirement” to force an applicant to elect to prosecute one of multiple inventions claimed in a patent application, which inventions are independent and distinct. *Helifix, Ltd. v. Blok-Lok, Ltd.*, 208 F.3d 1339, 1348 (Fed. Cir. 2000)(citing 35 U.S.C. § 121).

The Patent Office issued an Office Action⁹ dated September 8, 1997, which rejected application Claims 1-19 as being obvious¹⁰ over the U.S. Patent No. 4,450,024 (Cohen Decl., Exhibit E, the “’024 Patent”). G66-70, ¶ 6.

Briefly addressing the content of the ‘024 Patent with reference to Figure 2a thereof (reproduced below), a card has top and bottom plastic cover films 12 and 13, respectively. E5, Col. 3:50-54. A paper or plastic card bed 11 is positioned between the cover films 12 and 13. E5, Col. 3:50-54. The card bed 11 has a recess in which a protective carrier element 6 is placed. E5, Col. 3:55-56. The protective carrier element 6 holds an IC module 5 (not shown) therein. E5, Col. 3:10-14. An empty-spaced cavity 14 between the top outer surface of the carrier element 6 and the bottom surface of the cover film 12 forms a buffer zone. E5, Col. 3:56-63. A more detailed description of the ‘024 Patent is provided in Appendix 2 hereto.



In response to the Office Action, Mr. Leighton filed an “Amendment” dated January 8, 1998, which amended step (b) of application Claim 1 to recite, in pertinent part, positioning the electronic element “in the absence of a non-electronic carrier directly between said first and second plastic core sheets” G74 (bold font added). He also added new independent Claim

⁹ An “Office Action” is a report from the Patent Office regarding, among other things, the patentability of claims presented in a patent application.

¹⁰ “Even if the subject matter sought to be patented is not exactly shown by the prior art . . . a patent may still be refused if the differences would be obvious.” Novelty And Non-Obviousness, Conditions For Obtaining A Patent (<http://www.uspto.gov/web/offices/pac/doc/general/index.html#laws>) Obviousness is codified under 35 U.S.C. § 103.

23, which included a step (b) that was identical to amended step (b) of application Claim 1.¹¹ G78.

Mr. Leighton presented detailed remarks distinguishing his claims from the '024 Patent. *Id.* at G78-80. He described that unlike his invention, the '024 Patent requires special measures to protect the electronic element during lamination:

The '024 patent . . . protects the electronic element of the card by first placing it in a recess formed within a card layer The patent then requires that a "buffer zone" be present within the recess

. . . Further, the invention taught by the '024 patent requires that the electronic element also be placed in a protective carrier disk (6)

The controlled use of a heat and pressure cycle of the present invention eliminates the requirement of both a protective carrier disk for the electronic element and/or a recess or other buffer zone formed in one or more of the card layers for carrying and protecting the electronic element. . . .

G79 (emphasis added).

In response to the Amendment, the Patent Office issued a "Notice of Allowability" dated April 13, 1998, which allowed independent application Claims 1 and 23 (and all other pending claims). G81-82. Application Claims 1 and 23 then issued, respectively, as Claims 1 and 16 of the '207 Patent.

¹¹ Mr. Leighton's new application Claim 23 also included an ink printing step (d) that was similar to original step (d) of application Claim 1. G78. In the Amendment, however, he broadened step (d) of application Claim 1 to differentiate it from application Claim 23 as follows: "[printing on] coating at least one of said . . . outer surfaces of said core . . . with a layer of ink" G75 ("[]" indicates deletions; underlining indicates insertions).

2. The Prosecution History of the ‘155 Patent¹²

The ‘155 Patent issued from application number 09/158,290 (the “‘155 Application”), which is a continuation of the ‘207 Application. ‘155 Prosecution History at H19-34. A description of the ‘155 Prosecution History is attached hereto as Appendix 3.

B. The ‘099 and ‘367 Patents

United States Patent No. 6,036,099 is a continuation-in-part¹³ of the ‘207 Patent. Cohen Decl., Exhibit B, the “‘099 Patent.” U.S. Patent No. 6,514,367 is a continuation of the ‘099 Patent.¹⁴ Cohen Decl., Exhibit D, the “‘367 Patent.”

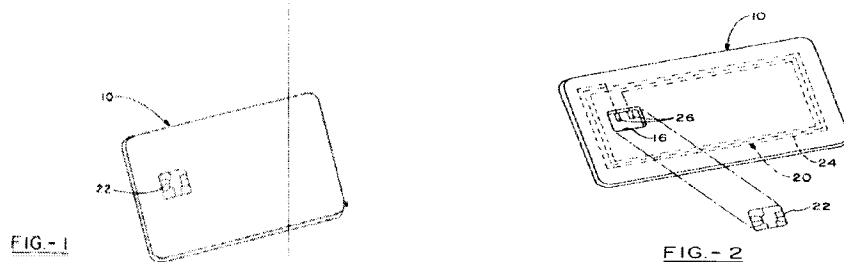
The ‘099 Patent improved upon the ‘207 Patent by teaching processes for manufacturing plastic cards that could be used in both contactless and contact modes of operation. The preferred embodiments “relate to dual function cards containing imbedded electronic elements as well as an exposed electronic contact surface.” B6, Col. 1:17-20.

¹² Cohen Decl., Exhibit H, the “‘155 Prosecution History.”

¹³ A “continuation-in-part application” contains “a portion or all of the disclosure of an earlier application together with added matter not present in that earlier application.” *Transco Prods.*, 38 F.3d at 555.

¹⁴ For ease of reference throughout this brief, Plaintiff cites only to the specification of the ‘099 Patent, although the same statements are found in the ‘367 Patent.

Figure 1 (reproduced below) depicts a finished card 10 having a chip 22 located under contacts at the surface of the card. B7, Col. 4:31-50. The '099 Patent teaches that the chip may cause the card to function as an RFID card when used with an antenna as described above, or function as a contact card, requiring physical contact between a reader and the contacts at the surface of the card. B7, Col. 4:56-63.



As shown in Figure 2 (reproduced above with extraneous reference numerals deleted), the card 10 includes an antenna 24, which is encapsulated within plastic core sheets 30 and 32 to form a core 33. B8, Col. 5:13-17; B3, FIG. 4. Similar to the '207 Patent, the '099 Patent discloses a highly coordinated heating, cooling, and pressure cycle to encapsulate the electronic element (here, the antenna 24) within plastic core sheets 30 and 32. B8, Col. 5:13-6:44. After lamination, the core 33 may be coated with a layer of ink. B8, Col. 6:45-48. A cavity 16 is milled in the card to expose the contact pads 26. B9, Col. 8:1-4. The chip 22 having a contact surface is inserted into the cavity and in electronic contact with the antenna 24 via contact pads 26. B9, Col. 8:4-6. Thus, the chip 22 is connected to the antenna 24 to operate in contactless mode, and the contacts are exposed at the surface of the card 10 to operate in contact mode.

1. The Prosecution Histories Of The '099 And '367 Patents¹⁵

The '099 Patent issued from application number 08/918,582 (the "'099 Application"). '099 Prosecution History at I18-51. The '367 Patent issued from application number 09/368,846 (the "'367 Application"). '367 Prosecution History at J21-52. A description of the '099 and '367 Prosecution Histories are attached hereto as Appendix 4 and Appendix 5, respectively.

V. THE LEGAL STANDARD FOR CLAIM CONSTRUCTION

The general law of claim construction as set forth by Her Honor in *British Telecomms. PLC v. Prodigy Communs. Corp.*, 189 F. Supp. 2d 101 (S.D.N.Y. 2002), applies equally today:

The technique for construction of a disputed claim was set forth by the Federal Circuit in the *Markman* decision. The meaning of a claim should be interpreted in light of the intrinsic evidence, comprised of the claims and the specification of the patent, and the prosecution history. The intrinsic evidence constitutes the public record of the patent on which the public is entitled to rely. Thus, if the intrinsic evidence is sufficient to resolve the meaning of a disputed term, then it is improper to resort to extrinsic evidence such as expert testimony or treatises. Extrinsic evidence only should be relied upon where necessary to resolve an ambiguity in a disputed claim term.

To define the scope of the patented invention, the Court must first look at the words of the claims themselves. Words in the claim are generally given their ordinary and customary meaning. However, "a patentee may choose to be his own lexicographer" and assign special definitions to the words in the claim, as long as those definitions are clearly stated in the patent specification or file history. Therefore, "it is always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." The Federal Circuit has stated that "claims must be read in view of the specification, of which they are a part." Because the specification must contain a description sufficient to enable those of ordinary skill in the art to make and use the invention, the specification "is the single best guide to the meaning of a disputed claim term."

The court also may consider the prosecution history of the patent. The prosecution history is the complete record of the proceedings before the Patent and Trademark Office. During the course of these proceedings, the applicant may have made express representations regarding the scope of the invention, so

¹⁵ Cohen Decl., Exhibit I, the "'099 Prosecution History" and Cohen Decl., Exhibit J, the "'367 Prosecution History."

the prosecution history is "often of critical significance to determining the meaning of the claims. Claim terms may appear to be plain language. . . . However, the prosecution history may demonstrate that the claims do not cover some matters that would otherwise be encompassed in the plain meaning of the words used. Prosecution histories often contain an analysis of the distinctions between the prior art and the applicant's claims, providing the Court with clues to limitations of the claims. Furthermore, "the prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." Even when the written description would otherwise support a construction, the prosecution history, which is generated afterwards, can relinquish any coverage of that claimed embodiment.

Id. at 106-107 (citations omitted).

Plaintiff sets forth the following additional legal framework due to the fact that (a) the Patents-In-Suit stem from a common parent application (*see* Family Tree) and (b) the Court is being asked to construe terms that are common to multiple claims of the Patents-In-Suit.

"[T]he prosecution history of one patent is relevant to an understanding of the scope of a common term in a second patent stemming from the same parent application."

Microsoft Corp. v. Multi-Tech Sys., 357 F.3d 1340, 1349 (Fed. Cir. 2004). *See also Jonsson v. Stanley Works*, 903 F.2d 812, 818 (Fed. Cir. 1990)(prosecution history of common parent patent sheds light on terms used in continuation-in-part patents) and *Laitram Corp. v.*

Morehouse Indus., Inc., 143 F.3d 1456, 1460 n.2 (Fed. Cir. 1998)(applying the prosecution histories of two sibling patents, which shared a common written description, to one another).

A claim term used in multiple claims must be construed consistently throughout such claims. *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1159 (Fed. Cir. 1997), cert. denied, 522 U.S. 1109 (1998)(citing *Fonar Corp. v. Johnson & Johnson*, 821 F.2d 627, 632, (Fed. Cir. 1987), *overruled in part*, 508 U.S. 83 (1993)(the meaning of a term in a claim must be defined in a manner that is consistent with its appearance in other claims in the same patent)).

VI. CONSTRUCTION OF THE CLAIMS

Plaintiff has identified thirty-six (36) claims of the Patents-In-Suit that require construction (the “Subject Claims”). Cohen Decl., Exhibit K, “Definitive List Of Claims To Be Construed By The Court” (filed October 15, 2004). For the Court’s convenience, Plaintiff presents the Subject Claims in a consolidated tabular format, which helps to illustrate similarities and differences between the claims. Cohen Decl., Exhibit L, “Claim Tables.” The Subject Claims are as follows:

Patent	Independent Claims	Dependent Claims
‘207 Patent	1, 16	6, 7, 8, 11, 14 and 15
‘155 Patent	1, 15	6, 7, 8, 12, 13, and 14
‘099 Patent	1	6, 7, 9, 12, and 14-16
‘367 Patent	1, 20	6, 9, 12, 15-17, 19, and 21-23

Claim 1 of the ‘207 Patent, presented below, is representative of the independent claims.

The emphasized type identifies claim language requiring construction.

1. A process for incorporating at least one *electronic element* in the manufacture of a plastic card, comprising the steps of:
 - (a) providing *first and second plastic core sheets*;
 - (b) positioning said at least one *electronic element* in the absence of a *non-electronic carrier directly* between said first and second plastic core sheets to form a core, said plastic core sheets defining a pair of inner and outer surfaces of said core;
 - (c) positioning said core in a *laminator apparatus*, and subjecting said core to a heat and pressure cycle, said heat and pressure cycle comprising the steps of:
 - (i) heating said core for a first period of time;
 - (ii) applying a first pressure to said core for a second period of time such that said at least one electronic element is encapsulated by said core;
 - (iii) cooling said core while applying a second pressure to said core,
 - (d) *coating* at least one of said outer surfaces of said core with a layer of ink; and
 - (e) applying a layer of overlamine film to at least one of said outer surfaces of said core.

A7 (emphasis and paragraphing added).

In addition, the word “*milling*” which appears in Claim 1 of the ‘099 Patent and Claims 1 and 22 of the ‘367 Patent also requires construction.

Plaintiff submits that, except for these terms, the Court should adopt the remaining language of the Subject Claims verbatim as its construction.

A. The “Electronic Element”

Step (b) of the independent Subject Claims each recite an “*electronic element*.” L2.

Plaintiff proposes that the Court construe this term as follows:

An “*electronic element*” is a device having distinct electrical characteristics and having terminals at which it may be connected to other elements to form a circuit that utilizes a semiconductor device.

Plaintiff now follows the rules stated above to arrive at its construction.

1. Plaintiff’s Construction Is Based On The Ordinary Meaning Of The Constituent Words

To Plaintiff’s knowledge, dictionaries do not directly define “electronic element.”

However, the definitions of the words that make up this term provide a clear ordinary meaning.

The defining dictionary entry for “element” is found under “component.” Cohen Decl., Exhibit M, *Dictionary of Scientific and Technical Terms* p. 668 [M6] (Sybil P. Parker ed., McGraw Hill 5th ed 1994)(“**element** . . . [ELEC] . . . **2. See component.**”). A “component” is “[a]ny electric device . . . having distinct electrical characteristics and having terminals at which it may be connected to other components to form a circuit.” *Id.* at 424 [M3] (electricity usage).

The word “electronic” modifies “element” and provides a specific type of circuit of which the “element” is a part, namely, a circuit that utilizes a semiconductor device, such as a chip. More specifically, “electronic” means “[p]ertaining . . . to circuits . . . utilizing electron devices” *Id.* at 661 [M5]. An “electron device” is a “device in which conduction is principally by electrons moving through a vacuum, gas, or semiconductor” *Id.* at 660 [M4].

In the context of the Patents-In-Suit, which relate to plastic cards that include a semiconductor chip, the conduction through gases or vacuum is not relevant. Thus, “electron

devices” should be limited to devices in which conduction is through semiconductors. Such devices are known as “semiconductor devices.” *Id.* at 1790 [M7] (“semiconductor device” means “[e]lectronic device in which the characteristic distinguishing electronic conduction takes place within a semiconductor”). It follows that “electronic” means “pertaining to circuits utilizing semiconductor devices.”

Plaintiff’s construction (reproduced below), therefore, is based on [a] the ordinary meaning of “element” as modified by [b] the ordinary meaning of “electronic”:

An “electronic element” is [a] a device having distinct electrical characteristics and having terminals at which it may be connected to other elements to form a circuit [b] that utilizes a semiconductor device.

The specifications and the prosecution histories are in full accord with this construction.

2. The Specifications Are Consistent With The Ordinary Meaning

While the specifications do not expressly define “electronic element,” they provide examples consistent with Plaintiff’s construction. For example, the ‘207 Patent states that

[e]lectronic element 20 may take a wide variety of forms and perform a wide variety of functions. . . . [It includes] a micro-chip 22 including a wire antenna 24 connected thereto, a micro-chip 22' and a circuit board antenna 24', a read/write micro-chip 22" and a wire coil antenna 24", or any other suitable electronic element.

A6, Col. 3:46-52. In these examples, the chip and antenna have distinct electrical characteristics and are connected to each other at terminals to form a circuit that utilizes a semiconductor device, such as a chip.

The ‘099 Patent uses similar language to indicate the breadth of this term and provides additional examples: “[e]lectronic element 20 may take a wide variety of forms (microprocessor chip, circuit board, transponder, etc.).” B7, Col. 4:35-37. The ‘099 Patent also teaches that an “electronic element” may be an antenna. B8, Col. 5:13-17; B3, FIG.4. These exemplary

electronic elements each have distinct electrical characteristics and would, when used in an RFID/contactless smart card, be connected to other electronic elements to form a circuit that utilizes a semiconductor chip. Indeed, the antenna would be useless if it was not connected in a circuit with a chip.

The foregoing demonstrates that the specifications are consistent with Plaintiff's construction. The same holds true for the prosecution histories.

3. The Prosecution Histories Are Consistent With The Ordinary Meaning

At no time during the prosecution of the Patents-In-Suit did Mr. Leighton argue in a manner that would alter the ordinary meaning of the "electronic element." In fact, U.S. Patent No. 5,519,201 (Cohen Decl., Exhibit F, the "'201 Patent") cited in the prosecution history of the '367 Patent fully supports Plaintiff's construction.

The '201 Patent teaches that various types of electronic components can be used in smart cards. In particular, it states that they

can be of any type such as . . . integrated circuit modules, transistors, diodes, and passive components such as resistors, inductors and capacitors. Further, an integrated circuit module for use with the invention can be a printed circuit board to which is attached one or more integrated circuit chips, a printed circuit board without an integrated circuit chip attached, or just an integrated circuit chip.

F8, Col. 2:55-64. The '201 Patent further describes that the chip of the integrated circuit module may be covered with an encapsulant. F12, Col. 9:17-33.

Like the other electronic elements described above, each of these structures has distinct electrical characteristics and would be connected to other electronic elements to form a circuit that utilizes a semiconductor chip.

In sum, the intrinsic evidence is consistent with the ordinary meaning of “electronic element,” which forms the basis for Plaintiff’s construction. Therefore, Plaintiff respectfully urges the Court to adopt the same.

B. “Plastic Core Sheets”

Step (a) of the independent Subject Claims each recites “providing first and second *plastic core sheets*.” L2. Plaintiff submits that this term should be construed as follows:

The “*plastic core sheets*” are plastic sheets between which the electronic element is positioned.

To Plaintiff’s knowledge, this term is not found in a dictionary. However, its meaning is clear from the wording contained in step (b) of the independent Subject Claims, which recite that the electronic element is positioned (in the absence of a non-electronic carrier directly) between the first and second plastic core sheets to form a core. L2.

The specifications and prosecution histories fully support this construction. *See e.g.* ‘207 Patent at A6, Col. 3:66-4:2 (“positioning an electronic element 20 between first and second sheets of card stock 30, 32 to form a core 33”); ‘099 Patent at C8, Col. 5:13-17 (“positioning an electronic element 20 . . . between first and second sheets of card stock 30, 32 to form a core 33”); and ‘207 Prosecution History at G79 and ‘099 Prosecution History at I80 (“the electronic unit is placed directly between two (2) plastic sheets”).

In view of the foregoing, Plaintiff respectfully requests that the Court adopt its proposed construction of “plastic core sheets.”

C. “Non-Electronic Carrier”

Step (b) of the independent Subject Claims each generally recite “positioning said at least one electronic element in the absence of *a non-electronic carrier* directly between said first and second plastic core sheets.” L2. Plaintiff proposes that the Court construe this term as follows:

A “non-electronic carrier” is a device that holds the electronic element to protect it from physical damage during lamination, where the device is not part of a circuit that utilizes a semiconductor device.

Plaintiff now demonstrates that this construction is proper based on the ordinary meaning of this term, taken in view of the prosecution history.

1. Plaintiff’s Construction Is Based On The Ordinary Meaning Of The Constituent Words

To Plaintiff’s knowledge, dictionaries do not contain an entry for the term “non-electronic carrier” and thus do not provide a direct definition. However, the individual words of this term provide insight into the proper construction.

A “carrier” is defined as a “compartmentalized holder used for storing, transporting, hauling, and testing electronic devices to protect them from physical damage.” Cohen Decl., Exhibit N, *Electronic Packaging, Microelectronics, and Interconnection Dictionary* p. 26 [N3].

The word “non-electronic” modifies “carrier.” Plaintiff previously defined “electronic,” in the context of the Patents-In-Suit, to mean “pertaining to circuits utilizing semiconductor devices.” *See supra* pp. 14-15. The addition of “non-” negates the “usual esp[ecially] positive characteristics” of “electronic.” Cohen Decl., Exhibit O, *Webster’s Collegiate Dictionary* p. 788 [O9](10th ed, © 1999; principal © 1993)(definition 3 of “non-”).

Based solely on the definitions of the constituent words, a “non-electronic carrier” would be “a compartmentalized holder used for storing, transporting, hauling, and testing electronic devices to protect them from physical damage, which device is not part of a circuit that utilizes a

semiconductor device.” However, as Plaintiff now demonstrates, the prosecution history of the ‘207 Patent proves that such a construction is not wholly accurate and should not include the underlined words. Plaintiff then shows that the specifications are consistent with Plaintiff’s construction.

**2. The Prosecution History Of The ‘207 Patent Elicits
The True Meaning Of “Non-Electronic Carrier”**

Claim 1 of the ‘207 Application originally recited

1. A hot lamination process for the manufacture of a plastic card, said process comprising the steps of:

(a) providing first and second plastic core sheets;

(b) positioning at least one electronic element between said first and second plastic core sheets to form a layered core

G44 (emphasis and paragraphing added).

The Patent Office issued an Office Action dated September 8, 1997, which rejected application Claims 1-19 as being obvious over the ‘024 Patent. G66-70, ¶6. The Patent Office believed that the ‘024 Patent taught all of the elements of application Claim 1 with the exception of the ink printing step (d) which it believed to be obvious to one skilled in the art. G66-70, ¶6.

In response to the Office Action, Mr. Leighton filed an “Amendment” dated January 8, 1998, which amended step (b) of application Claim 1 to recite, in pertinent part, positioning the electronic element “in the absence of a **non-electronic carrier** directly between said first and second plastic core sheets. . . .” G74 (bold font added).

Mr. Leighton presented detailed remarks to explain this amendment and distinguish the claims from the ‘024 Patent. G78-80. With regard to the carrier disclosed in the ‘024 Patent for protecting the electronic element during lamination, Mr. Leighton stated:

[T]he invention taught by the '024 patent requires that the electronic element . . . be placed in a protective carrier disk (6)

The controlled use of a heat and pressure cycle of the present invention eliminates the requirement of both a protective carrier disk for the electronic element and/or a recess or other buffer zone formed in one or more of the card layers for carrying and protecting the electronic element.

G79 (emphasis added).

These remarks confirm that the claimed “non-electronic carrier” relates to a device for carrying and protecting the electronic element during lamination and that inventions of the Patents-In-Suit lie, in part, on manufacturing plastic cards “in the absence of” such a non-electronic carrier.

Against Mr. Leighton’s arguments for patentability and the disclosures of the ‘024 Patent and the Patents-In-Suit, it is clear that the dictionary-based construction of “a compartmentalized holder used for storing, transporting, hauling, and testing electronic devices” is not wholly accurate. Indeed, the Patents-In Suit are not concerned with storing, transporting, hauling, and testing electronic devices. The ‘024 Patent also does not relate to storing, hauling or testing of electronic devices and only tangentially relates to transporting them. *See* ‘024 Patent, E4, Col. 1:48-52 (“a separate carrier element [is] produced independently” of the plastic card) and E5, Col. 3:15-16 (the carrier is “produced independently of the card production”). Therefore, it is not appropriate to include these functions in the construction. Further, since the Subject Claims cover the use of only one electronic element, there is no need for the holder to be “compartmentalized” to separate multiple electronic elements.

Based on the ordinary meanings of “non-electronic” and “carrier,” taken in view of the prosecution history of the ‘207 Patent, Plaintiff proposes that

a “non-electronic carrier” is a device that holds the electronic element to protect it from physical damage during lamination, where the device is not part of a circuit that utilizes a semiconductor device.

3. The Specifications Are Consistent With Plaintiff's Proposed Construction

The specifications are consistent with Plaintiff's proposed construction even though "non-electronic carrier" and its constituent words are not contained therein (with the exception of the independent claims). The Patents-In-Suit teach that the electronic element is positioned between the plastic core sheets without any type of carrier. To illustrate, the specific examples of the '207 Patent describe that a chip and antenna are positioned between two plastic core sheets. A6, Col. 3:47-52; 3:66-4:2. Similarly, the '099 Patent describes that an electronic element in the form of an antenna and its contact points is positioned between two plastic core sheets. B8, Col. 5:13-17; B3, FIG. 4. The specifications do not describe that a device is used to hold these electronic elements, let alone protect them during lamination.

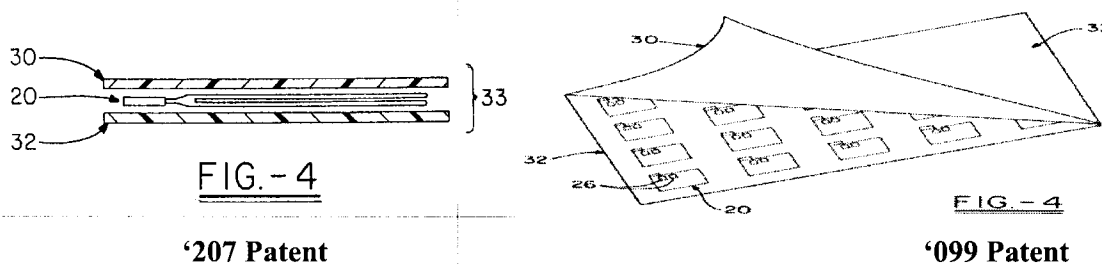
Thus, the specifications are consistent with Plaintiff's proposed construction of "non-electronic carrier," which should be adopted by the Court.

D. "Directly"

Step (b) of the independent Subject Claims each recites "positioning said at least one electronic element in the absence of a non-electronic carrier *directly* between said first and second plastic core sheets." L2. Plaintiff proposes "*directly*" means "**in immediate physical contact**" in accordance with its dictionary definition. *Webster's Collegiate Dictionary* p. 328 [O6](definition **1b** for adverb "directly").

1. The Specifications Are Consistent With The Ordinary Meaning

Figure 4 of the '207 Patent (reproduced below left) is an “exploded, schematic view of an electronic element [20] position[ed] between two plastic core sheets to form a core.”¹⁶ A6, Col. 3:4-6. As can be easily envisioned in a “non-exploded” view of this Figure, the electronic element 20 is positioned “in immediate physical contact” with the plastic core sheets 30 and 32.



The '099 Patent confirms the teaching of the '207 Patent. Figure 4 (reproduced above right) shows “a perspective view of a plurality of electronic elements positioned on a sheet of plastic core stock [32] and covered by a second sheet of plastic core stock [30].” B7, Col. 3:58-60. It is readily seen that the electronic elements 20 are “in immediate physical contact with” the plastic core sheets 30 and 32.

As such, the specifications are consistent with the ordinary meaning of “directly.”

2. The Prosecution Histories Are Consistent With The Ordinary Meaning

As described above, in response to the Office Action issued in the '207 Application, Mr. Leighton amended step (b) of application Claim 1 to recite, in pertinent part, positioning the electronic element “in the absence of a non-electronic carrier **directly** between said first and

¹⁶ An “exploded” view is one “showing the parts separated but in correct relationship to each other.” *Webster's Collegiate Dictionary* p. 409 [07](definition of “exploded”).

second plastic core sheets. . . .” ‘G74 (bold font added). Mr. Leighton presented remarks on this amendment, stating:

The ‘024 patent . . . protects the electronic element of the card by first placing it in a recess formed within a card layer so as to avoid damage to the electronic element from localized pressure applied in the lamination process. The patent then requires that a “buffer zone” be present within the recess . . . in order to enable the card assembly to be subjected to a full laminating pressure. . . .

. . . .
The controlled use of a heat and pressure cycle of the present invention eliminates the requirement of both a protective carrier disk for the electronic element and/or a recess or other buffer zone formed in one or more of the card layers for carrying and protecting the electronic element. . . . Unlike anything shown in the prior art, the electronic unit is placed directly between two (2) plastic sheets.

G79 (emphasis added).

In the ‘024 Patent, the buffer zone is an empty space formed by a cavity 14 between the top outer surface of the carrier element 6 and the bottom surface of the cover film 12. *See supra* p. 7. Thus, as indicated in Mr. Leighton’s remarks, the electronic unit is not in “immediate contact with” the plastic cover film 12.

In sum, the intrinsic evidence is consistent with the ordinary meaning of “directly” which forms the basis for Plaintiff’s construction. Therefore, Plaintiff respectfully urges the Court to adopt the same.

E. “Laminator Apparatus”

Step (c) of the independent Subject Claims each recites “positioning said core in a *laminator apparatus*” and subjecting the core to a heat and pressure cycle. L3. Plaintiff proposes that the Court construe this term as follows:

The “*laminator apparatus*” is equipment that is used to unite two or more layers of material, such as the core, by the application of heat and pressure.

This construction follows directly from the ordinary meaning of the constituent words. An “apparatus” is “equipment designed for a particular use.” *Webster's Collegiate Dictionary* pp. 55-56 [O3-4]. The particular use, in this case, is obtained from the word “laminate,” which means “**2b** : to unite (layers of material) by an adhesive or other means.” *Webster's Collegiate Dictionary* p. 653 [O8].

The specifications and prosecution histories fully support this construction. *See e.g.* ‘207 Patent at A5, Col. 2:16-20 (the laminator is used for “the manufacture of plastic cards including at least one electronic element therein”) and A6, Col. 4:22-5:5 (the laminator is used to unite the plastic core sheets and the electronic element); and ‘207 Prosecution History at G79-80 (the laminator provides “a coordinated heat and pressure cycle which uses multiple temperatures, pressures, and time periods” to embed the electronic element between plastic core sheets).

In view of the foregoing, Plaintiff respectfully requests that the Court adopt its proposed construction of “laminator apparatus.”

F. “Coating”

Step (d) of Claim 1 of the ‘207 and ‘099 Patents recites “(d) **coating** at least one of said outer surfaces of said core with a layer of ink . . .” L3. Claim 12 of the ‘367 Patent also recites a “coating” step. L6. Plaintiff proposes that the Court enter a construction that “**coating**” means “**covering**.”

The ordinary meaning of the transitive verb “coat” is “**2** : to cover or spread with a finishing, protecting, or enclosing layer.” *Webster's Collegiate Dictionary* p. 219 [O5]. The claims that include the “coating” step specify that the layer is ink. L3, L6.

The specifications fully support this construction and provide examples of “coating.” To illustrate, the ‘207 Patent describes that “at least one of the upper and lower surfaces of the core

compris[es] a coating printed or otherwise applied thereon.” A5, Col. 2:20-24 (emphasis added). It further explains that the “core 33 is coated on at least one of it’s [sic] upper and lower surfaces 34, 35 with a layer of printing ink 36. This may be accomplished using a wide variety of printing techniques” A7, Col. 5:6-12.

The ‘099 Patent includes similar language (B8, Col. 6:45-49) and goes even further using “coating” and “covering” interchangeably. B9, Col. 7:46-51 (the “sheet of plastic card stock . . . comprises at least core 33 with at least one surface 34, 35 thereof covered by a layer of ink 36.”)(emphasis added).

The prosecution histories do not use “coating” in an inconsistent manner, but rather confirm that it is not limited to “printing on.” *See e.g.* ‘207 Prosecution History at G75 and ‘099 Prosecution Histories at I74 and I77 (claim amendments broadened the “printing on” step to a “coating” step).

For these reasons, Plaintiff requests that the Court adopt its construction of “coating.”

G. “Milling”

Step (e) of Claim 1 of the ‘099 Patent recites a step of “**milling** a region of said core to a controlled depth so as to form a cavity which exposes at least one contact pad of said electronic element.” L4. Claims 1 and 22 of the ‘367 Patent recite virtually identical steps. L4 and L7. Plaintiff proposes that the Court enter a construction that “**milling**” means “**using a machine to remove.**”

Plaintiff’s construction is based on the ordinary meaning of “milling,” namely, “(2) [a] machining process for removal of material.” *Dictionary of Composite Materials* p. 91 [P3].

The specifications are consistent with this construction, stating that “each card 10 undergoes a controlled-depth milling operation to form a window or cavity 16” B9, Col.

8:1-6. The prosecution histories of the '099 and '367 Patents offer nothing to change this conclusion in that the Office Actions therein only tangentially mention a "milling" step with regard to the prior art '024 and '201 Patents. *See e.g.* I60, ¶ 3 and J69-70, ¶ 12.

For these reasons, the Court should adopt Plaintiff's proposed construction of "milling."

H. Other Terms Of The Independent And Dependent Subject Claims

Plaintiff submits that, except for the terms for which a construction was provided above, the Court should adopt the remaining language of the Subject Claims verbatim as its construction.

VII. CONCLUSION

For the foregoing reasons, Plaintiff respectfully requests that the Court adopt its proposed construction of the claims terms.

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APPENDIX 1

APPENDIX 1

DESCRIPTION OF U.S. PATENT NO. 4,450,024

United States Patent No. 4,450,024 discloses methods for producing plastic cards having an integrated circuit ("IC") or chip therein. Cohen Decl., Exhibit E, the "'024 Patent." It describes that a hot lamination technique can be used to embed a chip within a plastic card, but only if "special measures are taken to protect the IC module and its connection leads." E4, Col. 2:31-38. These "special measures" include the use of a protective carrier element and a recess/buffer zone to protect the chip during lamination.

Figure 1 (reproduced below) shows the top-view of a card 1, which includes an IC module 5. E5, Col. 3:10-11. The IC module 5 includes a chip and connection leads. E4, Col. 1:5-11.

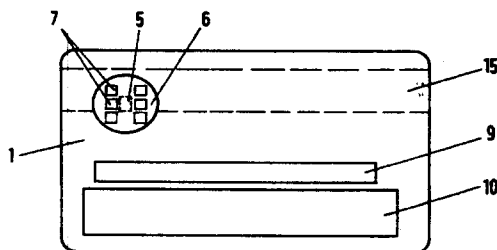
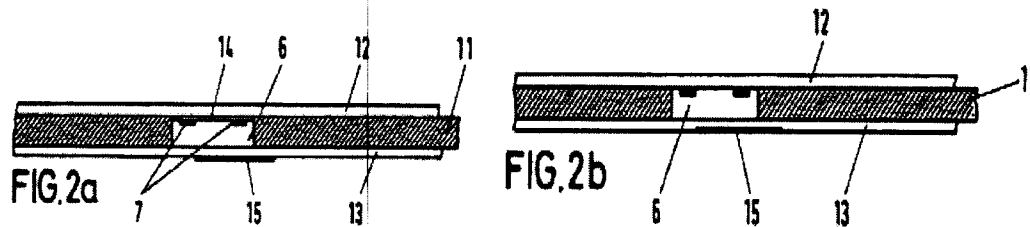


FIG. 1

The IC module 5 is held within a protective carrier element 6. E5, Col. 3:10-14. Contacts 7 are connected to the connection leads of the IC module 5. E5, Col. 3:10-14. The card 1 also includes embossing fields 9 and 10 on its top surface (shown) and a magnetic strip 15 on its bottom surface (not shown). E5, Col. 3:24-29.

Figure 2a (reproduced below) shows a cross-section of an unfinished card before the layers are laminated. E4, Col. 2:67-68. The card has top and bottom plastic cover films 12 and 13, respectively. E5, Col. 3:50-54. A paper or plastic card bed 11 is positioned between the cover films 12 and 13. E5, Col. 3:50-54. The card bed 11 has a recess in which the carrier

element 6 is placed. E5, Col. 3:55-56. A cavity 14 between the top outer surface of the carrier element 6 and the bottom surface of the cover film 12 forms a buffer zone. E5, Col. 3:56-63.



In order to make a finished card, heat and pressure are applied to the layered assembly of Figure 2a. E4, Col. 1:34-47. Prior to the point that the cover films 12 and 13 soften, the carrier element 6 – and thus the chip therein -- receives little pressure. E5, Col. 3:61-63. This is due to the buffer zone formed between the top outer surface of the carrier element 6 and the bottom surface of the cover film 12, which insulates the carrier element 6 from the lamination pressure. E5, Col. 3:61-63.

As the layered assembly is heated, the plastic cover layers 12 and 13 soften, the cavity fills with plastic, and the buffer zone disappears. E5, Col. 3:61-68. Then, the full laminating pressure is applied to the carrier element 6 since there no longer is a buffer zone that insulates the carrier element 6 from the lamination pressure. E5, Col. 3:65-68.

Figure 2b (reproduced above) shows a cross-section of the card after lamination, where it is seen that the plastic material of the cover film 12 has filled the buffer zone. E4, Col. 2:67-68; E5, Col. 4:3-9.

The carrier element 6 is critical to the '024 Patent because it holds the chip to protect it from pressures exerted during lamination. *See e.g.* E6, Col. 6:37-46 (“the carrier element is subjected to the full laminating pressure in the final phase of the laminating process”) and E5, Col. 3:61–4:2 (when the buffer zone disappears, “the full laminating pressure now also takes effect in the area of the carrier element 6”).

The recess/buffer zone performs an equally important protective function in that it prevents local pressure peaks that could damage the carrier and the chip. *See e.g.* E4, Col. 2: 31-45 (“great mechanical stress during the laminating process can endanger the IC [module] . . . especially when local pressure peaks appear in the area of the arrangement. This type of stress can break the silicon wafer and/or destroy the junctions of the crystal and the connection leads”), and E1, Abstract (the “buffer zones protect the arrangement from local pressure peaks in the initial phase of the laminating process”).

The Patents-In-Suit do not require these “special measures” to protect the chip, and thus improve over the prior technology by reducing the complexity of manufacturing plastic cards.

APPENDIX 2

APPENDIX 2

BRIEF DESCRIPTION OF THE '155 PROSECUTION HISTORY

The '155 Patent issued from application number 09/158,290 (the "'155 Application'"), which is a continuation of the '207 Application. The '155 Application initially contained 22 claims, including independent Claim 1.¹ '155 Prosecution History at H28-31.

Application Claim 1 of the '155 Application as originally filed is set forth below, wherein steps (b) and (d) are identical to corresponding lettered steps of original application Claim 1 of the '207 Application:

1. A hot lamination process for the manufacture of a plastic card, said process comprising the steps of:
 - (a) providing first and second plastic core sheets;
 - (b) **positioning at least one electronic element between said first and second plastic core sheets** to form a layered core . . . ;
 - (d) **printing on** at least one of said upper and lower surfaces of said core such that a layer of ink is applied to said at least one upper and lower surface of said core

H28 (emphasis and paragraphing added).

In an Office Action dated September 27, 1999, the Patent Office rejected Claims 1-19 as being obvious over Mr. Leighton's '207 Patent. H55-57, ¶ 2. Mr. Leighton filed a responsive Amendment dated March 24, 2000. H58-64. There, he expressly stated that the '155 Application is a continuation of the '207 Application, which negated the prior art effect of the '207 Patent. H63.

Mr. Leighton also amended application Claim 1 of the '155 Application to include language similar to amended application Claim 1 of the '207 Application – that is, positioning the electronic element “in the absence of a non-electronic carrier directly” between the plastic core sheets. H59. He did not provide substantive remarks on this amendment.

Mr. Leighton deleted the ink printing step (d) of application Claim 1 in its entirety. H59. He offered remarks on this amendment, explaining that the “application of ink or otherwise coating a surface is not an essential element of the invention.” H63.

The Amendment also added new independent Claim 23, which, like amended application Claim 1, recited that the electronic element is positioned “in the absence of a non-electronic carrier directly” between the plastic core sheets.² H62. Application Claim 23 also provided a heating, cooling, and pressure cycle that differed from application Claim 1, but did not include a step of applying an overlamine film. H62. Mr. Leighton did not provide substantive remarks on this new claim.

In response to the Amendment, the Patent Office issued a “Notice of Allowability” dated June 5, 2000, which allowed application Claims 1 and 23 (and all other pending claims) of the ‘155 Application. H67-69. The Notice included a statement by the examiner on the reason for allowance: “None of the prior art of record teach the method as claimed particularly the application of the separate heating and two or three pressure steps as applied to the encapsulation of electronic devices. . . .” H69. After additional non-substantive prosecution which resulted in a “Supplemental Notice of Allowability,” application Claims 1 and 23 issued, respectively, as Claims 1 and 15 of the ‘155 Patent. H75-77.

¹ Application Claim 21 was also independent, but was withdrawn with application Claims 20 and 22 in response to a restriction requirement. H56.

² A dependent claim 24 was also added and claims 6, 9, 10, 13, 14, and 19 were deleted. H62 and H58.

APPENDIX 3

APPENDIX 3

BRIEF DESCRIPTION OF THE '099 PROSECUTION HISTORY

The '099 Patent issued from application number 08/918,582 (the "'099 Application").¹ The '099 Application initially contained 24 claims, including independent Claims 1 and 21.² '099 Prosecution History at I35-40.

Application Claim 1 of the '099 Application as originally filed is set forth below, wherein steps (b) and (d) are identical to corresponding lettered steps of original application Claim 1 of the '207 Application:

1. A hot lamination process for the manufacture of a plastic card, said process comprising the steps of:
 - (a) providing first and second plastic core sheets;
 - (b) **positioning at least one electronic element between said first and second plastic core sheets** to form a layered core . . . ;
 - (d) **printing on** at least one of said upper and lower surfaces of said core such that a layer of ink is applied to said at least one upper and lower surface of said core . . .

I35 (emphasis and paragraphing added).

Application Claim 21 recited a similar step of "(b) positioning at least one electronic element having at least one electronic subcomponent between said first and second plastic core sheets to form a layered core" I39. It also recited an ink printing step (d) that was identical to the ink printing step (d) of original application Claim 1 of the '207 Application. I40.

In an Office Action dated November 18, 1998, the Patent Office rejected Claims 1-24 as obvious over the '024 Patent in combination with other patents. I57-66, ¶¶ 3-5. Mr. Leighton filed a "Response and Amendment A" dated March 12, 1999. I73-83. There, he amended

¹ The '099 Application is a continuation-in-part of the '207 Application. The '099 Application also claimed the benefit of provisional application number 60/024,255. See "Certificate of Correction" at I123-124.

² Claim 23 was also independent, but was cancelled with application Claims 2, 7, 10, 20, and 24 during prosecution. I74.

application Claim 1 to include language similar to amended application Claim 1 of the '207 Application – that is, positioning the electronic element “in the absence of a non-electronic carrier directly” between the plastic core sheets. I74. Application Claim 23 was amended in a similar manner, but did not include the word “directly.” I77.

Mr. Leighton presented remarks distinguishing the '024 Patent that were identical to the remarks presented in the '207 Prosecution History. Cf. '099 Prosecution History at I79-80 with '207 Prosecution History at G78-80.

Similar to the '207 Application, Mr. Leighton amended application Claims 1 and 21 to broaden the “printing on” language of step (d) to steps of “coating.” I74 and I77.

In reply to the Response and Amendment, the Patent Office issued a Notice of Allowability dated April 8, 1999, which allowed application Claims 1 and 21 (and all other pending claims) of the '099 Application. I84-86. The Notice stated as reasons for allowance that “[n]o prior art or reasonable combination of art was found to overcome the limitation of the electronic unit being placed directly between two plastic sheets.” I85.

After additional non-substantive prosecution, the Patent Office issued a Notice of Allowance on April 12, 1999, and application Claims 1 and 21 issued, respectively, as Claims 1 and 17 of the '099 Patent.

APPENDIX 4

APPENDIX 4

BRIEF DESCRIPTION OF THE '367 PROSECUTION HISTORY

The '367 Patent issued from application number 09/368,846 (the "'367 Application").¹

The '367 Application initially contained 24 claims, including independent Claim 1.² '367

Prosecution History at J38-43. As originally filed, Claim 1 recited

1. A process for incorporating at least one electronic element in the manufacture of a plastic card, comprising the steps of:
 - (a) providing first and second plastic core sheets;
 - (b) positioning said at least one electronic element in the absence of a non-electronic carrier directly between said first and second plastic core sheets to form a core, said plastic core sheets defining a pair of inner and outer surfaces of said core;
 - (c) positioning said core in a laminator apparatus, and subjecting said core to a heat and pressure cycle, said heat and pressure cycle comprising the steps of:
 - (i) heating said core for a first period of time;
 - (ii) applying a first pressure to said core for a second period of time such that said at least one electronic element is encapsulated by said core;
 - (iii) cooling said core while applying a second pressure to said core.
 - (d) milling a region of said core to a controlled depth so as to form a cavity which exposes at least one contact pad of said electronic element.

J38 (paragraphing added).

In a first Office Action dated December 6, 2000, the Patent Office rejected Claims 1-17, 23, and 24 as being obvious over "Japanese Patent 6-176214 in view of UK 2,279,610 and Templeton, Jr. et al. [U.S. Patent No. 5,519,201] optionally further taken with UK 2,225,283." J70-74, ¶¶ 13-14. The Examiner alleged that Japanese Patent 6-176214 taught the elements of Claim 1 with the exception of cooling under pressure and milling the card to gain access to the antenna. J70-71. The Examiner further alleged that UK 2,279,610 and the '201 Patent made up these deficiencies by teaching, respectively, cooling under pressure and milling the card. J70-71.

¹ The '367 Application is a continuation of the '099 Application and a continuation-in-part of the '207 Application. D6, Col. 1:5-11.

² Claim 18 was also independent, but was withdrawn with dependent claims 19-22 in response to a restriction requirement. J67-68.

Mr. Leighton responded with an “Amendment And Request For Reconsideration Under 37 C.F.R. § 1.111” dated February 13, 2002. J81-90. There, he made a non-substantive change to Claim 1 (adding the word “and”), deleted Claim 11, and also added independent Claim 27 and Claims 28-30 depending therefrom. J82-84. Application Claim 27 was identical to application Claim 1, except that it excluded the milling step (d). J83.

In the remarks, Mr. Leighton sought to overcome this rejection by arguing that UK 2,279,610 was not prior art to the ‘367 Application due to its publication date. J86. In response, the Patent Office issued a second Office Action dated May 8, 2002. J100-109. There, the Patent Office disagreed with Mr. Leighton (whose attorney had misread the publication date), and continued to maintain the obviousness rejection based on the four references above. J106, ¶10. The same rejection was applied to new Claim 27, except that it did not include the ‘201 Patent because it excluded the milling step. J104-106, ¶9.

Mr. Leighton responded to the second Office Action with a second “Amendment And Request For Reconsideration Under 37 C.F.R. § 1.111.” J112-120. He addressed the substance of the rejection and amended application Claims 1 and 27, step (c)(iii), to recite that the “second pressure” exerted while cooling was “at least 10% greater than the first pressure” exerted during heating. J113-114. Mr. Leighton submitted remarks explaining this point of distinction. J116-117.

The Patent Office then issued a “Notice of Allowability” dated October 9, 2002 which allowed application Claims 1 and 27 (and all other pending claims). J126-128. Application Claims 1 and 27 then issued, respectively, as Claims 1 and 20 of the ‘367 Patent on February 4, 2003.

APPENDIX 5

Appendix 5

Family Tree for the Patents-In-Suit

